IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Re:	Application of:	Anwar Abumustafa		
	Serial No.:	10/590,284	Confirm. No.:	8086
	Filed:	April 19, 2007		
	For:	FLOW-CONTROL VALVE DEVICE FOR A PUMP		
	Docket No.:	688.1076	Art Unit:	3746
	Examiner:	Amene Setegne Bayou		

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

November 29, 2011

APPELLANT'S BRIEF UNDER 37 C.F.R. § 41.37

Sir:

Appellant submits this brief for the consideration of the Board of Patent Appeals and Interferences (the Board) in support of their appeal of the Rejection dated July 6, 2011. The statutory fee of $540.00 has been previously with the Appeal Brief dated April 14, 2011. Applicant herewith pays the difference between the fee increase and the amount previously paid in the amount of $80.00. If any additional fees are deemed to be due at this time, the Assistant Commissioner is authorized to charge payment of the same to Deposit Account No. 50-0552.

1. REAL PARTY IN INTEREST

The real party in interest is LUK FAHRZEUG-HYDRAULIK GMBH & CO. KG, a German corporation having a place of business in Bad Homburg, Germany, and the assignee of the entire right, title and interest in the above-identified patent application. The invention was assigned to LUK FAHRZEUG-HYDRAULIK GMBH & CO., KG by an assignment originating from inventor Anwar Abumustafa recorded on April 19, 2007 at reel 019208, frame 0553.

2. RELATED APPEALS AND INTERFERENCES

Appellants, their legal representatives, and assignee are not aware of any appeal or interference that directly affects, will be directly affected by, or will have a bearing on the Board=s decision in this appeal.

3. STATUS OF CLAIMS

Claims 7 to 11 and 13 are pending in the application. Claims 7 to 11 and 13 were rejected in the Office Action dated July 6, 2011. Claims 1 to 6 and 12 were canceled.

The rejections to claims 7 to 11 and 13 thus are appealed. A copy of appealed claims 7 to 11 and 13 is attached hereto as Appendix A.

4. STATUS OF AMENDMENTS

No amendments have been filed subsequent to the July 6, 2011 Office Action.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 7 recites a pump comprising: a flow-control valve device including a piston displaceably accommodated within a piston bore belt (for example, page 4, paragraph

[0014], lines 1 to 5; for example, piston 30 and bore 3 in Fig. 2), the piston bore having at least one inflow channel and at least one outflow channel (for example, page 3, paragraph [0013], lines 3 to 8; for example, radial outflow bores 13 in Fig. 2) and the piston having an axial inflow orifice and a plurality of radial, lateral outflow orifices (for example, page 4, paragraph [0014], lines 6 to 7 and 9 to 12; for example, axial inflow orifice 32 and outflow orifices 35 in Fig. 2) and a circumferential outflow groove disposed between a first collar and a second collar (for example, page 4, paragraph [0014], lines 7 to 8; for example, circumferential outflow groove 31 and guide collar 19 and middle piston collar 17 in Fig. 2), the second collar forming a control edge for an outflowing fluid flow (for example, page 3, paragraph [0013], line 9; for example, second collar 17 and control edge 15 in Fig. 2), the axial inflow orifice extending cylindrically at least to a beginning of the radial, lateral outflow orifices (for example, axial inflow orifice 32 and outflow orifices 35 in Fig. 2), and the circumferential outflow groove expanding in terms of a radial depth on an outer circumference of the piston towards the control edge (for example, page 4, paragraph [0014], lines 7 to 9; for example, circumferential outflow groove 31, piston 30 and control edge 15 in Fig. 2).

Dependent claim 8 recites to claim 7 wherein the outflow groove expands in a conical form on a piston side and, as the result of a radially, inwardly directed arc, subsequently reaches a greatest depth in a region of the control edge (for example, page 4, paragraph [0014], lines 7 to 9 and 12 to 15; for example, circumferential outflow groove 31 in Fig. 2).

Dependent claim 9 recites to claim 8 wherein diameters of the radial outflow orifices extend from the axial, cylindrical inflow orifice into the radially, inwardly directed arc in the control edge region (for example, page 4, paragraph [0014], lines 9 to 12; for example, radial outflow orifices 35 in Fig. 2).

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 7 to 10 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen et al (US 5,513,672) in view of Nirasawa et al. (WO 03/040599, as US 7,146998).

Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen et al (US 5,513,672) in view of Nirasawa et al. (WO 03/040599, as US 7,146998) and further in view of Lambert et al. (US 5,639,066).

7. ARGUMENTS

A. 35 U.S.C. §103 Rejections: Nguyen et al. and Nirasawa et al.

Claims 7 to 10 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen et al. (US 5,513,672) in view of Nirasawa et al. (WO 03/040599, as US 7,146998).

Nguyen et al. discloses a flow control valve 10 including an axial cavity 14 formed in a housing 12 and a valve piston 16 displaceable in a cavity 14 by a spring 18. (Col. 3, lines 29 to 33). An end portion 24 of piston 16 includes a cavity 26 communicating with a pressure annular space 30, which communicates with a channel 32 in housing 12. (Col. 3, lines 33 to 38). During operation, an increase in pressure in pressure cavity 60 causes piston 16 to move away from pressure cavity 60 and compress spring 18 such that fluid in pressure cavity 60 flows into a channel 40 for passage to a suction area of a pump. (Col. 4, lines 24 to 34). Due to movement of piston 16 away from pressure cavity 60, an opening 36 in end portion 24 of piston 16 is displaced toward a widening portion of a conical portion 52 of a throttle extension 50, causing an annular gap 54 leading into cavity 26 to be reduced, reducing fluid flow through channel 32. (Col. 4, lines 36 to 41).

Nirasawa discloses a hydraulic regulation valve 10 including a valve body 20 having five oil receiving grooves 31 to 35 and a spool 40 including two lands 41, 42 having a passage 44 between lands 41, 42. (Col. 5, lines 5 to 41). A part of land 42 is located in first groove 31 and a part of passage 44 is located in second groove 32. (Col. 5, lines 43 to 45). When the operation of

the hydraulic pump is started, pressure oil from a hydraulic pump is supplied from a pump passage L1 directly into first groove 31 and then to a main passage L2. (Col. 6, lines 35 to 38). Immediately after the pressure oil has entered main passage L2, the pressure oil is led through a feedback passage L4 into third groove 33, shifting spool 40 rightward and connecting first groove 31 and second groove 32 through passage 44, such that part of the oil from passage L1 is led to the lubrication oil passage L3. (Col. 6, lines 38 to 44). The connecting of passages L1, L3 forces spool 40 to shift leftward so land 42 blocks part of the opening of first groove 31, reducing the flow of oil escaping to lubrication oil passage L3 and increasing the pressure of main passage L2. (Col. 6, lines 44 to 52). As the pressure of main passage L2 increases, the pressure of third groove 33 also increases, shifting spool 40 rightward and causing land 42 to block less of first groove 31. (Col. 6, lines 44 to 52). The flow of oil escaping to lubrication oil passage L3 increases again, reducing the pressure of the main oil passage L2. (Col. 6, lines 44 to 52).

1. Independent Claim 7

Claim 7 recites "pump comprising:

a flow-control valve device including a piston displaceably accommodated within a piston bore, the piston bore having at least one inflow channel and at least one outflow channel, and the piston having an axial inflow orifice and a plurality of radial, lateral outflow orifices and a circumferential outflow groove disposed between a first collar and a second collar, the second collar forming a control edge for an outflowing fluid flow,

the axial inflow orifice extending cylindrically at least to a beginning of the radial, lateral outflow orifices, and the circumferential outflow groove expanding in terms of a radial depth on an outer circumference of the piston towards the control edge."

It is respectfully submitted that neither Nguyen et al. nor Nirasawa et al. discloses or makes obvious "the axial inflow orifice extending cylindrically at least to a beginning of the radial, lateral outflow orifices, and **the circumferential outflow groove expanding in terms of a radial depth on an outer circumference of the piston towards the control edge**" as recited in claim 7. The Office Action cites annular space 30 of Nguyen et al. as being a circumferential outflow groove,

but admits that annular space 30 of Nguyen et al. is not "expanding in terms of a radial depth on an outer circumference of the piston towards the control edge" as recited in claim 7. The Office Action then alleges that passage 44 of Nirasawa et al. cures this deficiency of Nguyen et al. with respect to claim 7 and that it would have been obvious to one of skill in the art to have modified Nguyen et al. in such a manner "in order to have smooth flow transition between the discharge orifice and an outlet connection (the curved surface reduces flow resistance and accompanied flow loss is reduced)." (Page 4).

First, one of skill in the art would not have had any reason to have modified Nguyen et al. such that annular space 30 of Nguyen et al. is shaped in the same manner as passage 44 of Nirasawa et al., particularly in a manner such that annular space 30 of Nguyen et al. is "expanding in terms of a radial depth on an outer circumference of the piston towards the control edge" as recited in claim 7. In Nguyen et al., annular space 30 is configured to keep passage 28, which is formed in piston 16 extending radially towards annular space 30, in communication with channel 32 as piston 16 is moved toward and away from throttle 44. Nguyen et al. does not indicate that it would be in any way advantageous to alter the shape of annular space 30 or that the shape of annular space 30 is in any way inadequate. In Nirasawa et al., in contrast to annular space 30 of Nguyen et al., passage 44 is not connected to any passages formed in spool 40 extending radially towards passage 44, and no fluid flows axially inside of spool 40 and radially exits spool 40 into passage 44. Passage 44 is merely provided to connect first groove 31 and second groove 32, such that part of the oil entering from passage L1 in valve body 20 is led circumferentially around spool 40 through passage 44 to lubrication oil passage L3 on the opposite in the opposite side of valve body 20.

Accordingly, even if somehow one of skill in the art would understand Nirasawa et al. as teaching that passage 44 provides a beneficial shape for fluid flow, one of skill in the art would not have modified Nguyen et al. annular space 30 in the manner alleged by the Examiner because fluid flows into and out of annular space 30 of Nguyen et al in a much different manner, and from different directions, than the fluid does in the passage 44 of Nirasawa et al. In particular, Nirasawa

et al. clearly does not teach or provide any reason for one of skill in the art to apply the shape of passage 44 of Nirasawa et al. to annular space 30 of Nguyen et al., as fluid in Nguyen et al. does not enter annular space 30 from channel 40 in housing 12 and flow circumferentially around piston 16 through annular space 30 to a channel in the opposite side of housing 12. If anything, the shape of passage 44 of Nirasawa et al. would only be understood as being applicable to a passage on the circumference of a cylindrical body receiving fluid entering the passage radially externally from one side and traveling circumferentially around the cylindrical body to another side, not a passage on the circumference of a cylindrical body receiving fluid entering the passage radially internally and radially exiting the passage, as is the situation in Nguyen et al. Accordingly, the "circumferential outflow groove" of claim 7 would not have been obvious over Nguyen et al. in view of Nirasawa et al.

Furthermore, it is respectfully submitted that the alleged modification of Nguyen et al. in view of Nirasawa is a result of improper hindsight bias based solely on a desire to meet the language of claim 7 and not on any teaching of either reference or of knowledge of one of skill in the art at the time of the present invention. The Examiner clearly has not taken into account what Nguyen et al. and Nirasawa both as a whole actually teach, but instead has used the present invention as a blueprint and has merely searched through drawings of valve devices to find a similar shape to reconstruct the invention recited in claim 7. ("To draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction—an illogical and inappropriate process by which to determine patentability." *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570 (Fed. Cir. 1996) (citing *W.L. Gore & Assoc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983); "The invention must be viewed not after the blueprint has been drawn by the inventor, but as it would have been perceived in the state of the art that existed at the time the invention was made." Id. (citing *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138 (Fed. Cir. 1985)).

The Examiner's improper approach is illustrated by the Examiner's stated reasoning for modifying Nguyen et al. in view of Nirasawa. The Examiner's reasoning is that such a

combination would have been obvious "in order to have smooth flow **transition**" because "the curved surface **reduces flow resistance** and accompanied **flow loss is reduced**." (Page 4) (emphasis added). However, a thorough analysis of both Nguyen et al. and Nirasawa shows that neither reference actually implicitly or explicitly provides any basis for this reasoning. Instead, a comparison of the terminology used in the Examiner's reasoning and the present specification clearly indicates that the basis for the Examiner's reasoning is the present specification. (See, e.g., paragraph [0005]: "These features advantageously enable the radial, lateral outflow orifices to be located in a piston region having a relatively large outside diameter, so that they, in turn, may have a relatively large diameter as well, thereby making it possible for the webs disposed therebetween to be stable enough to absorb the axial forces, and to then **transition** in the area of the control edge into a deepened outflow groove capable of **directing the entire oil flow relatively losslessly** to the control edge." See also, paragraph [0014]: "Thus, as a result of these features, given a great enough depth of the circumferential outflow groove, a relatively large diameter 41 of radial outflow orifices 35 is achieved, which leads to substantially **low resistances** and thus to **flows whose lossless characteristics are correspondingly enhanced** and to an improved charging of the pump."). The lack of evidentiary support for the Examiner's conclusory reasoning for combining Nguyen et al. and Nirasawa and the similarities between the Examiner's reasoning and Applicant's disclosure, illustrate that the Examiner's reconstruction includes knowledge gleaned only from Applicant's disclosure. ("'Any judgement on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and **does not include knowledge gleaned only from applicant's disclosure**, such a reconstruction is proper'" (MPEP § 2145(X)(A), quoting *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971)). Accordingly, it is respectfully submitted that the Examiner has not established a prima facie case of obviousness with respect to claim 7.

Reversal of the rejection of claims 7 to 10 and 13 under 35 U.S.C. §103, is respectfully requested.

2. Dependent Claim 8: Argued Separately

Claim 8 recites "[t]he pump as recited in claim 7 wherein the outflow groove expands in a conical form on a piston side and, as the result of a radially, inwardly directed arc, subsequently reaches a greatest depth in a region of the control edge."

The Office Action states that Nirasawa et al. teaches these features of claim 8 but does not specify how or where these features are taught in Nirasawa et al. Passage 44 of Nirasawa et al., the alleged "outflow groove," does not expand in a conical form and, as result of a radially, inwardly directed arc, subsequently reach a greatest depth in a region of a control edge. Although a portion of passage 44 could possibly be understood as a being conical, there is not portion subsequent to this region that is a **radially, inwardly directed arc**, which reaches a greatest depth in a region of a control edge. Additionally, the Office Action not provide any reasoning whatsoever as to how or why one of skill would have modified Nguyen et al. such that annular space 30 of Nguyen et al. is arranged in such a manner, and neither reference suggests such a modification. Accordingly, it is respectfully submitted that the Office Action has clearly not established a prima facie case of obviousness with respect to claim 8. (See MPEP 2142; *KSR Int'l Co. v. Teleflex Inc.*, 383 127 S. Ct. 1727, 1740-41 (2007) ("[R]ejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.")). Furthermore,

For this additional reason, withdrawal of the rejection under 35 U.S.C. 103(a) of claim 8 is respectfully requested.

3. Dependent Claim 9: Argued Separately

Claim 9 recites "[a] pump as recited in claim 8 wherein diameters of the radial outflow orifices extend from the axial, cylindrical inflow orifice into the radially, inwardly directed arc in the control edge region."

As discussed above with respect to claim 8, Nirasawa et al. does not disclose the "radially, inwardly directed arc" as recited claim 9 and for this reason alone, claim 9 is not obvious in view of the cited references. Additionally, the Office Action states that Nirasawa et al. teaches these features of claim 9, but does not provide any reasoning whatsoever as to how or why one of skill would have modified Nguyen et al. such that annular space 30 of Nguyen et al. is arranged in such a manner that diameters of passage 28 of Nguyen et al., the asserted "radial outflow orifices" of claim 9 extend into a radially, inwardly directed arc. Neither reference indicates any reason for such a modification and the Examiner has also not even attempted to articulate any reason for such a modification. Accordingly, it is respectfully submitted that the Office Action has clearly not established a prima facie case of obviousness with respect to claim 8. (See MPEP 2142; *KSR Int'l Co. v. Teleflex Inc.*, 383 127 S. Ct. 1727, 1740-41 (2007) ("[R]ejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.")).

B. 35 U.S.C. §103 Rejections: Nguyen et al., Nirasawa et al. and Lambert et al.

Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen et al (US 5,513,672) in view of Nirasawa et al. (WO 03/040599, as US 7,146998) and further in view of Lambert et al. (US 5,639,066).

Claim 11 is dependent on claim 7. Because Lambert et al. does not cure the deficiencies of Nguyen et al. and Nirasawa et al. discussed above with respect to claim 7, reversal of the rejection of claim 11 under 35 U.S.C. §103, is respectfully requested.

CONCLUSION

It is respectfully submitted that the application is in condition for allowance. Favorable consideration of this appeal brief is respectfully requested.

Respectfully submitted,

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APPENDIX A:

PENDING CLAIMS 7 to 11 and 13 OF U.S.
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Claim 7 (previously presented): A pump comprising:

a flow-control valve device including a piston displaceably accommodated within a piston bore, the piston bore having at least one inflow channel and at least one outflow channel, and the piston having an axial inflow orifice and a plurality of radial, lateral outflow orifices and a circumferential outflow groove disposed between a first collar and a second collar, the second collar forming a control edge for an outflowing fluid flow,

the axial inflow orifice extending cylindrically at least to a beginning of the radial, lateral outflow orifices, and the circumferential outflow groove expanding in terms of a radial depth on an outer circumference of the piston towards the control edge.

Claim 8 (previously presented): The pump as recited in claim 7 wherein the outflow groove expands in a conical form on a piston side and, as the result of a radially, inwardly directed arc, subsequently reaches a greatest depth in a region of the control edge.

Claim 9 (previously presented): The pump as recited in claim 8 wherein diameters of the radial outflow orifices extend from the axial, cylindrical inflow orifice into the radially, inwardly directed arc in the control edge region.

Claim 10 (previously presented): The pump as recited in claim 7 wherein the piston includes a third collar.

Claim 11 (previously presented): The pump as recited in claim 7 wherein the first and second collars have circumferential pressure-equalization grooves.

Claim 13 (previously presented): The pump as recited in claim 7 wherein the pump is a power-steering pump.

APPENDIX B

Evidence Appendix under 37 C.F.R. §41.37(c)(ix):

No evidence pursuant to 37 C.F.R. §§1.130, 1.131 or 1.132 and relied upon in the appeal has been submitted by appellants or entered by the examiner.

APPENDIX C

Related proceedings appendix under 37 C.F.R. §41.37(c)(x):

As stated in "2. RELATED APPEALS AND INTERFERENCES" of this appeal brief, appellants, their legal representatives, and assignee are not aware of any appeal or interference that directly affects, will be directly affected by, or will have a bearing on the Board=s decision in this appeal.